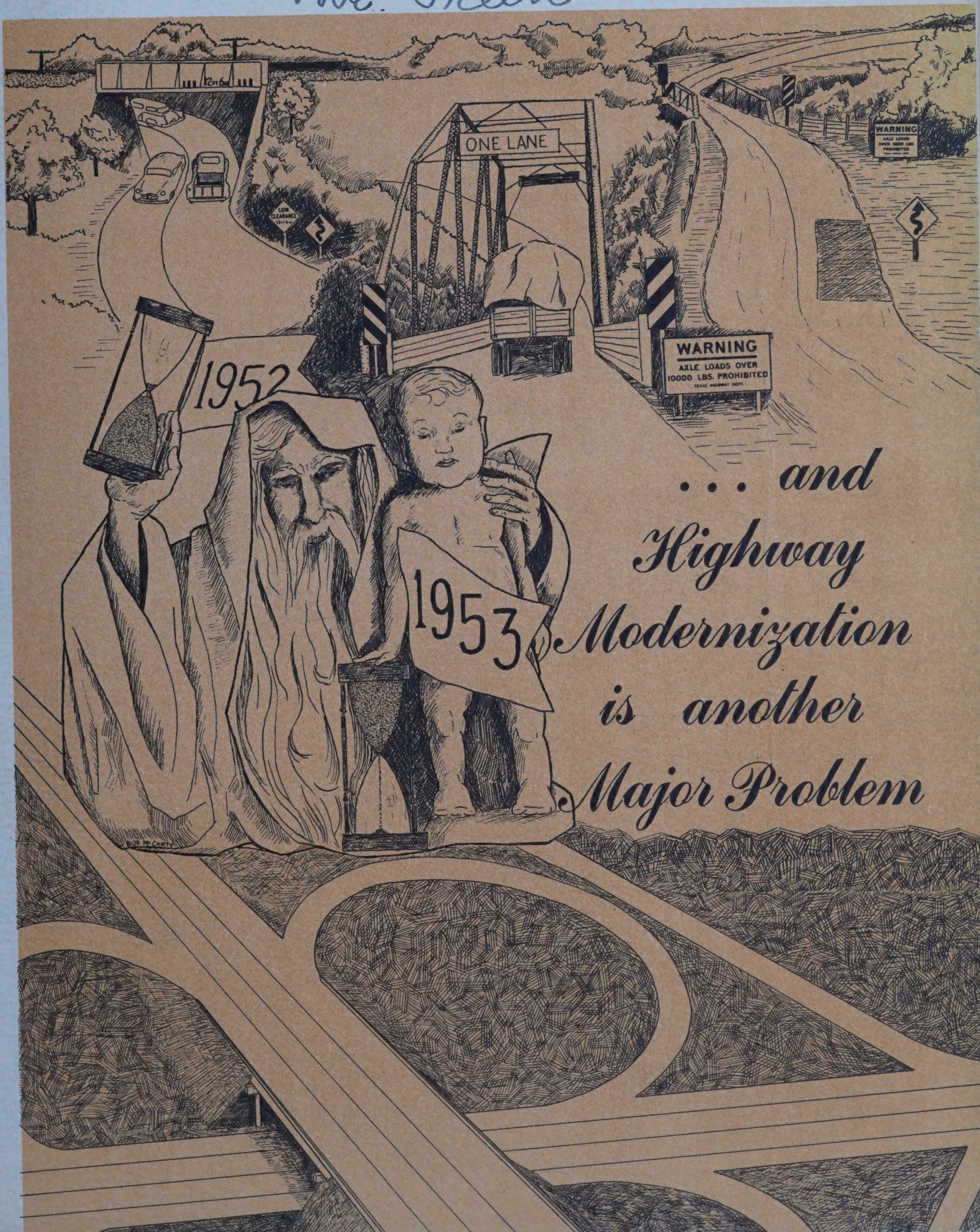
TEXAS HIGHWAY DEPARTMENT

Construction & Maintenance

BULLETIN No. 19

Jan. 1953

Mr. Green



... and Highway Modernization is another Major Problem

17

Foreword

This bulletin is published for the purpose of presenting practical information applicable to current highway problems. These conclusions and data are not necessarily endorsed by the Highway Department nor are they to be construed as instructions. Employees are invited and urged to submit suggestions and relate experiences which would benefit those engaged in the construction and maintenance of highways.

Photographic services are available and other assistance may be obtained if desired in preparing material for submission. All material and comments should be directed to the Chief Engineer, Construction & Maintenance, Austin, Texas.

Published Jointly by

Maintenance Division	**D- 3**
Equipment & Procurement Division	**D- 4**
Construction Division	**D- 6**
Traffic Services Division	**D-16**

COMPILED AND EDITED
INFORMATION SECTION,
TRAFFIC SERVICES DIVISION
REPRODUCED
OPERATIONS DIVISION
TEXAS HIGHWAY DEPARTMENT
AUSTIN 14, TEXAS

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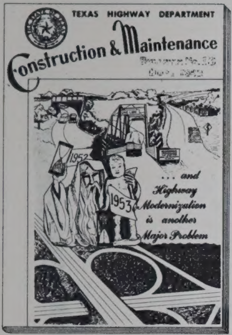
About the Cover . . .


TEXAS HIGHWAY DEPARTMENT
Construction & Maintenance
1952
1953
. . . and Highway Modernization is another Major Problem

The new year holds many national and international problems to be solved. The limelight will probably be focused on the highway modernization problem. This subject will be discussed at all levels, from individual citizens to legislators, in an attempt to find a solution.

Texas has nearly a quarter million miles of public roads consisting of streets, county roads, and highways. There are 196,265 miles of rural roads and some 24,569 miles of streets which constitute 7 per cent of the total roads in the United States. During the last decade, the total mileage of public roads in Texas has remained somewhat static, increasing only 4 per cent. There has been a decisive shift in the mileage of city, county, and state maintenance. Since 1941, the state highway system has increased 73 per cent while the city street system has increased 21 per cent. The county mileage has decreased 8 per cent.

Our public road system is dependent upon trunk highways. It is this nucleus, around which the state's entire transportation system is built, that constitutes the most crucial problem. The trunk system has become progressively inadequate during the last two decades because of the tremendous increase in automotive transportation and inadequate highway revenue. It will cost slightly over one billion dollars to completely rehabilitate our rural trunk highways.

Therein lies the basic critical highway problem facing the people of Texas during this coming year . . .

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Construction and Maintenance Bulletin

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Traffic Services Division D-16

COMPILED AND EDITED

Traffic Services Division, INFORMATION SECTION

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As We See It

In the final analysis, what neighbors say about the Department is the most valuable endorsement or the most damaging indictment the Department can have.

The Department is part of the town it lives in — wherever it is — San Augustine, Tilden, Alpine or Dallas. The home town is first base, its attitude is first consideration.

If the Department is considered an asset to the town, if it does a good job, if it has a pleasing appearance, if it has a happy family of employees, if its people are courteous to visitors, if its people take a real interest in the community — the Department is a good citizen. That pays dividends in the attitude of the townfolk, the town press, the town government, the town factors which can make or break the Department in its march to success.

By and large what the public thinks of the Department is mainly a reflection of what those who work for you and live near you think of you.

Surprising But True

$153.84 PER WORKING HOUR

$1,230.73 PER WORKING DAY

$31,999.61 PER WORKING MONTH

$357,986.10 PER YEAR

Equipment and Procurement Division

The above figures reveal the department's tire and tube bill for last year. We used 10, 835 tires at an average cost of approximately $33. 03 each. The department has more than 31, 000 wheels on the ground. No other part of our equipment operation offers so many opportunities to save the department money.

There are a great many ways in which a well-designed and properly-built tire can be subjected to damage and premature wear. Check the following items and see if there is any situation where you have failed to set up prevention measures. If the following material is studied, and the recommendations followed, our tire cost should be materially reduced.

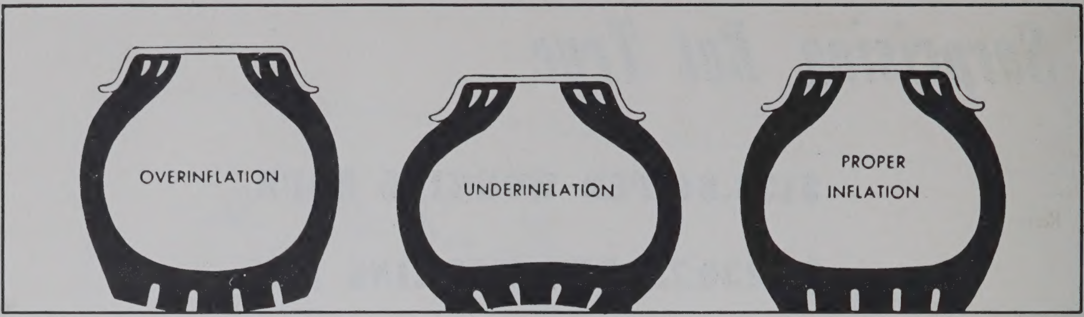
OVERLOADING - The maximum carrying capacity for every tire has been accurately calculated. To tax any tire beyond this maximum is pure and simple tire abuse. This point cannot be over-emphasized!

Overloading produces extreme and sharp flexing of the side-walls. This causes heat "build-up," deteriorating the tire and causing failure by separation and blowout. Overloading also magnifies the effect of running over an otherwise harmless obstacle to the extent that the cords break under the excessive, concentrated impact and the tire is ruined. You cannot gain by increasing the air pressure to compensate for overload.

The correct load for any tire is given in the accurate load on inflation tables at the back of your price list furnished by our contractors. After determining the maximum carrying capacity of each tire, total the maximum carrying capacity for all tires on the vehicle. That will be the total permissible load of cargo and vehicle combined. Deduct from the total the weight of the vehicle itself. The balance will be the maximum pay load permissible. Do not exceed this figure!

UNDERINFLATION AND OVER-INFLATION - It is ironic that the most common cause of damage to tires is improper inflation, a condition that is easy to detect, and easy to obtain and use (tire pressure gauges). No excuse, except negligence or ignorance, should ever be accepted for operating tires that are improperly inflated.

There is an efficient, economical, and correct pressure that has been specified by tire engineers. These figures have been furnished you by our present tire and tube contractor. They should be followed exactly.



Section of overinflated tire showing how center of tread is subjected to excessive wear.

Underinflated tires flex at every turn of wheel, resulting in high internal heat, fabric breaks.

Correctly inflated tires permit all of tread to contact road, are not soft enough to flex excessively.

Excessive heat is created within the tire and within the tread by abnormal flexing due to underinflation. This is especially true if the tire is operated at speeds above those recommended in the load tables, or with loads greater than specified. The heat may reach a temperature approaching or exceeding that at which the tire was vulcanized or cured during manufacture. For that reason, the component part of the tire tends to separate with money-wasting and time-consuming results.

Because tires are designed to give proper traction with long life at a specified air pressure, overinflation is just as dangerous as underinflation. Less tread comes in contact with the road and traction efficiency is reduced. A tendency to spin or skid is created. This results in a waste of rubber and engine power. The center part of the tread that does make contact with the road wears out faster, while good tread rubber on each side of center goes to waste. The vehicle is "hard-riding," and the vibration affects wear on other vehicle parts and causes spillage.

OVERRATED SPEED - All tires are designed for definite speed, depending on the load carried. Check your tire information sheet for correct speed of your vehicle.

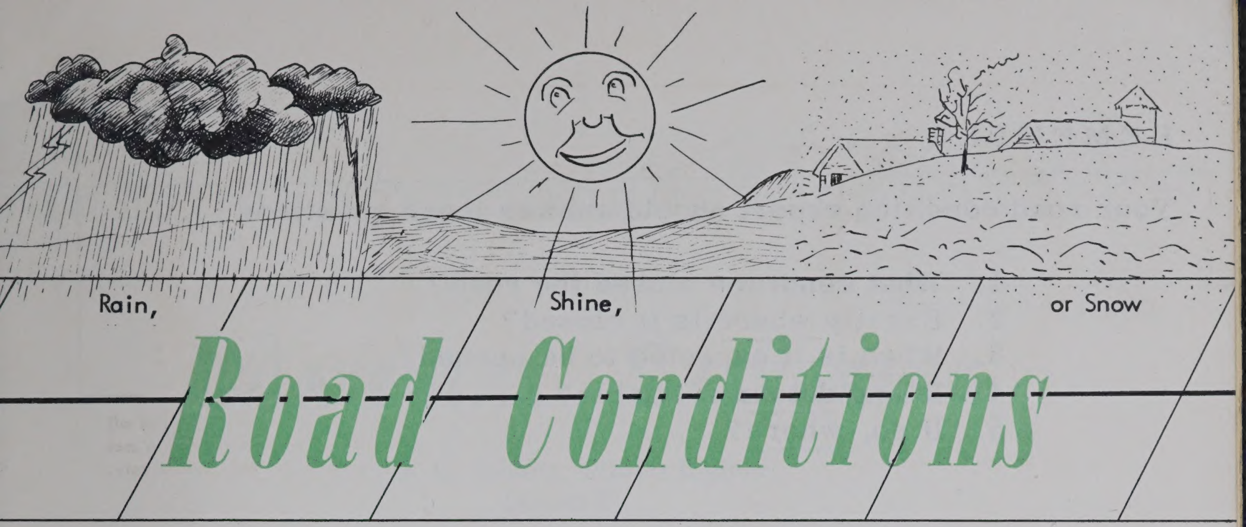
SPINNING THE WHEELS - A spinning wheel on a motor vehicle gets you nowhere except deeper into the ground. Every turn of a wheel, without traction, not only scrapes off good rubber but wastes engine power. Get help-Get out - Get going.

BRAKING-A vehicle operated at the recommended speeds can be brought to a stop, even in emergencies. Quick stops scuff off good tread rubber.

DON'T BLEED TIRES - There is a common belief that tires should be "bled" on extremely hot days, to offset the expansion of air in the tire due to temperature build-up. While it is true that a certain amount of expansion takes place with an increase in temperature, it is insignificant compared to the increase by the high temperature brought about by underinflating. Furthermore, as the heat of the day dissipates the air in the tire cools, leaving the bled tire definitely underinflated. Bleeding, by any method, is not recommended.

TALK TIRE CONSERVATION- Even if we know all about the dangers to tires that exist, it won't bring about tire conservation unless this knowledge is imparted to our drivers and operators.

Most of our men are conscientious. Any lack of efficiency is usually due to lack of information, or misinformation. If we will correct all such conditions, most of our tire worries will be ended. At the time of their employment and regularly thereafter, our men should be checked on their knowledge of tire use and tire abuse. If they are uninformed, give them proper instructions and insist on observation of these instructions.



Rain, Shine, or Snow

Road Conditions

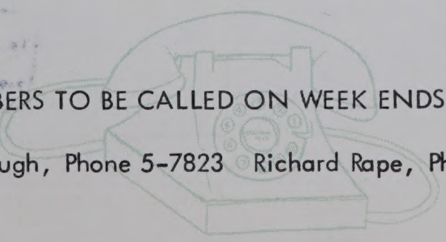
Texans have long boasted of having the world's most extreme and unpredictable weather. As natives, we are inclined to suspect as the years go by that there is more truth than poetry in the boast. Consequently, it is only natural that motorists would be particularly concerned with the effects of weather on the roads.

When waters rise, snows fall, ice forms, or sand blows, the traveling public questions every highway office for information that they rightfully feel is very important to their safety and driving convenience. These questions are now familiar ones to all of us - "How are the roads for my trip?"; "Are there any highways closed by this weather?"

About two years ago the current procedure of relaying road condition information to the Austin office by teletype was installed. One man and an alternate have been designated in each district as responsible for keeping a "weather eye" open and relaying information concerning any hazardous road conditions to D-16 in Austin. Reports from these men are compiled into one comprehensive report and relayed by teletype to all districts and to the Travel Information Bureaus. Upon receipt in the Austin office, this road condition information is immediately phoned to the various news services so that the traveling public will also be advised through the press and radio.

Bad weather has a habit of coming at inopportune times such as on week ends and on holidays. A round of applause should go to those district men who collect road information at all hours of nonworking days and faithfully report it to Austin. For example, J. D. Willson of the Lubbock office and Palmer Massey of Childress found occasion on Christmas Eve to use the Austin phone numbers designated for week-end and holiday calls.

Providing the general public with up-to-date and accurate information has become a service as essential as the many others that the Highway Department performs. This service is looked upon favorably by the general public and press alike and has certainly proved to be sound public relations.



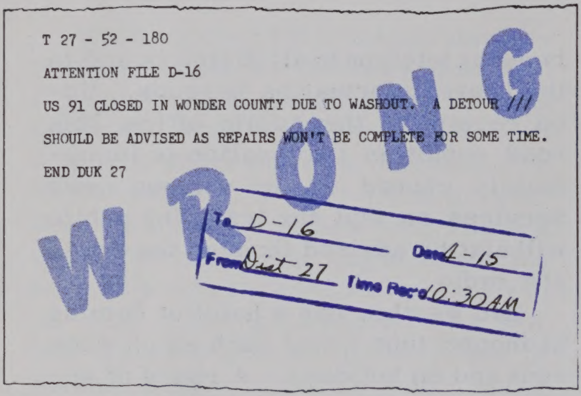
AUSTIN NUMBERS TO BE CALLED ON WEEK ENDS AND HOLIDAYS

Dale Yarbrough, Phone 5-7823 Richard Rape, Phone 53-5247

REMEMBER . . .

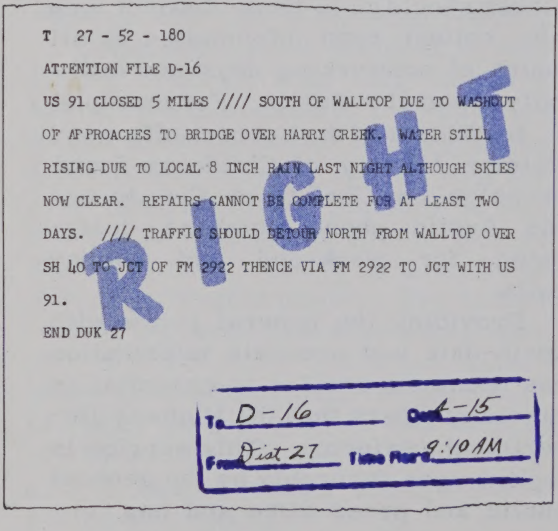
Your road condition report should answer these questions . . .

1. What condition closed the road?
2. Exactly where is it closed?
3. When is it expected to be opened?
4. Is any detour available?
5. If so, where?



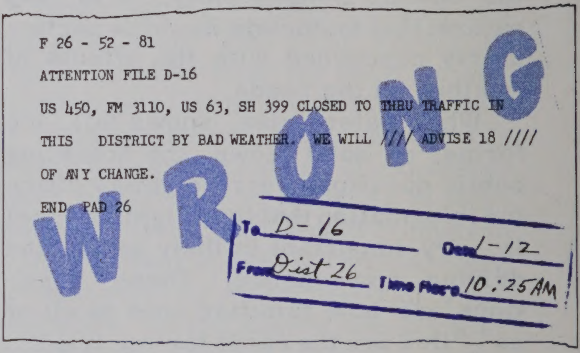
T 27 - 52 - 180
ATTENTION FILE D-16
US 91 CLOSED IN WONDER COUNTY DUE TO WASHOUT. A DETOUR ///
SHOULD BE ADVISED AS REPAIRS WON'T BE COMPLETE FOR SOME TIME.
END DUK 27

To D-16
Date 4-15
From Dist 27
Time Rec'd 10:30AM



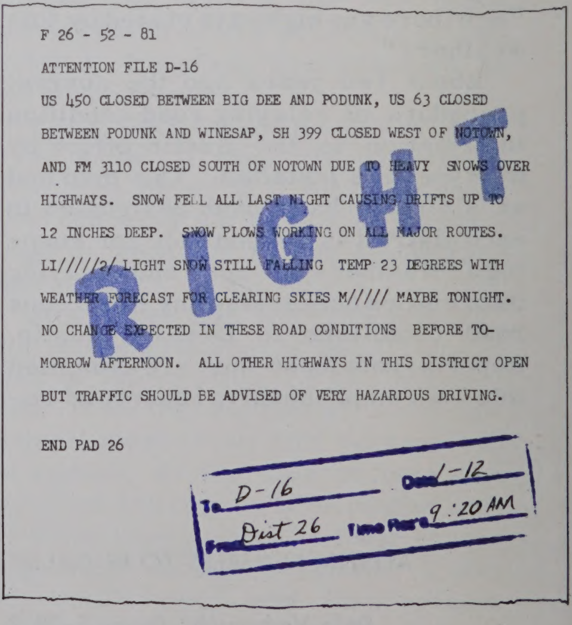
T 27 - 52 - 180
ATTENTION FILE D-16
US 91 CLOSED 5 MILES //// SOUTH OF WALLTOP DUE TO WASHOUT
OF APPROACHES TO BRIDGE OVER HARRY CREEK. WATER STILL
RISING DUE TO LOCAL 8 INCH RAIN LAST NIGHT ALTHOUGH SKIES
NOW CLEAR. REPAIRS CANNOT BE COMPLETE FOR AT LEAST TWO
DAYS. //// TRAFFIC SHOULD DETOUR NORTH FROM WALLTOP OVER
SH 40 TO JCT OF FM 2922 THENCE VIA FM 2922 TO JCT WITH US
91.
END DUK 27

To D-16
Date 4-15
From Dist 27
Time Rec'd 9:10AM



F 26 - 52 - 81
ATTENTION FILE D-16
US 450, FM 3110, US 63, SH 399 CLOSED TO THRU TRAFFIC IN
THIS DISTRICT BY BAD WEATHER. WE WILL /// ADVISE 18 ////
OF ANY CHANGE.
END PAD 26

To D-16
Date 1-12
From Dist 26
Time Rec'd 10:25AM



F 26 - 52 - 81
ATTENTION FILE D-16
US 450 CLOSED BETWEEN BIG DEE AND PODUNK, US 63 CLOSED
BETWEEN PODUNK AND WINESAP, SH 399 CLOSED WEST OF NOTOWN,
AND FM 3110 CLOSED SOUTH OF NOTOWN DUE TO HEAVY SNOWS OVER
HIGHWAYS. SNOW FELL ALL LAST NIGHT CAUSING DRIFTS UP TO
12 INCHES DEEP. SNOW PLOWS WORKING ON ALL MAJOR ROUTES.
LI/////2/ LIGHT SNOW STILL FALLING TEMP 23 DEGREES WITH
WEATHER FORECAST FOR CLEARING SKIES M///// MAYBE TONIGHT.
NO CHANGE EXPECTED IN THESE ROAD CONDITIONS BEFORE TO-
MORROW AFTERNOON. ALL OTHER HIGHWAYS IN THIS DISTRICT OPEN
BUT TRAFFIC SHOULD BE ADVISED OF VERY HAZARDOUS DRIVING.

END PAD 26

To D-16
Date 1-12
From Dist 26
Time Rec'd 9:20 AM

MATERIAL SALVAGING

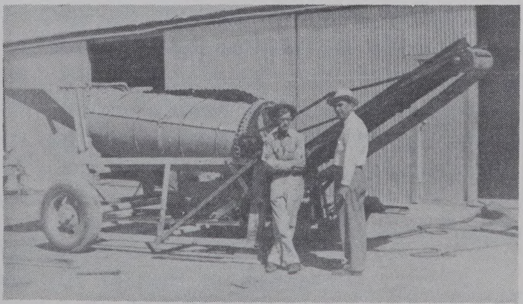
J. C. Roberts, District Engineer
District 8

Over a period of several years we have accumulated a sizeable amount of asphalt aggregate as a result of underrun on various jobs and of salvaging material from numerous jobs. Investment in this cover material amounts to about $20, 000.

We are making a concentrated effort to lower our district stock account and in so doing we desire to use the surplus aggregate scattered throughout the district which has been left over from the various jobs. Some of this material has been moved several times resulting in an accumulation of dirt and foreign material. Also, during the prolonged drouth, the material has become covered with sand and dirt and is not usable in its present condition.

To make this material available for use, we decided to construct a small portable screening unit from salvaged materials in our shop to screen the aggregate and make it serviceable. We purchased a screen for $22 and used salvaged material and our first investment was about $350. We considered this minor equipment and planned to use it temporarily, therefore did not list it as major equipment.

Our first effort was not successful and it was necessary to change the unit before it would work. This was done at a cost of $835. 60. Of this amount, $186. 58 was for material and $649. 02 was for labor. We tried the plant and found it very effective in screening in the materials.



Personnel*

Mark Swain, Senior Resident Engineer
District 20

The question of how to use to the best advantage the personnel which we have is certainly a complex one and its best solution will vary with the personality and caliber of the personnel and with the types of work to be done, so that a discussion of this kind must, through necessity, be of a general nature.

The question seems to resolve itself into three parts:

1. Holding the personnel we now have.
2. Organization.
3. Training.

It is obvious that in order to use the personnel we now have, we must be able to keep them. All we need to do to keep them is employ all of the well-established principles of good organizations. With experienced men so few, it is necessary that we build our individual organization about those we have, keeping in mind, of course, the work to be done.

I will not presume, therefore, to try to suggest an organization pattern that could be followed in every residency in the district, but rather, I shall outline what we are doing and attempting to do in the Port Arthur Residency.

In order that you may better understand the "why" of our setup it will be necessary to state some of our ideas regarding what is good and what is bad in organization. With some of these you may not all agree, but you will at least understand the underlying ideas upon which they are based.

A good organization should operate as a well-trained team, each member thoroughly understanding his role and cooperating with the others to encompass the over-all objective.

So that each employee will feel that he is a part of the team he should have a definite responsibility, however small it may be, and with it adequate authority to carry it out. He should know definitely that it is his responsibility and his alone.

It is much better that a man be given a single, small responsibility than that two or more jointly share a larger one. If a man's responsibility is not clear cut and well defined, he might find himself in a position similar to the two drunks who were flying down the road in an automobile.

One said, "Why don't you shloe down, Sharley, we ain't in such a big rush."

"I ain't drivin'," Charley replied.

A man must always know when he is supposed to have the wheel. For this reason I am a firm believer in the proposition that in organizations such as ours, responsibility, coupled with adequate authority, should be delegated as far down the line as possible. Indeed, it is apparent that this is the principle on which the Department as a whole is based, and I think it has proved an excellent one.

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* From a paper presented at the last Resident Engineers Meeting in District 20, entitled "How to Use to the Best Advantage the Personnel Which We Have."

The army is another type of organization excellent in its kind. It has a clear-cut line of authority with definite responsibilities for everyone, but I think that is about as far as we can afford to follow the army pattern--for the simple reason that we don't have any privates. All of our men are expected to think and at times must rely on their own judgment, and also, the army has no problem of keeping its men.

There are many other precepts of good organization with which we are all familiar such as fairness, recognition of merit, going through proper channels, requiring good order and good planning. Good planning is essential if we are to avoid lost motion. And last but not least, correcting attitudes are important. If we want to instill in our men the proper attitudes toward ourselves and the Department, first we had better look to our attitudes toward them. I don't believe we can correct a man's attitude by bawling him out about it every time we see him. We can only correct it through our attitude toward him.

As an example of what I mean let's take a hypothetical case. There are two inspectors on a job (any kind of highway job) discussing the best way to repair a bad piece of work which they had failed to prevent. Neither of them has had the experience or education to make the repair correctly without help. While they are discussing the matter the resident engineer is seen approaching.

Tom says, "Here comes old Bellyache. Wonder who he's going to work over this time?"

Says Jerry, "I don't know, but if the old So and So hasn't found something wrong he'll hang around until he does."

Tom: "Yeah, and harp on it every time he sees us for the next six months. Hey, better cover up that bad place quick."

If you overheard such a conversation, wouldn't you think the inspectors had wrong attitudes? But wouldn't you also feel that the resident engineer very likely had the wrong attitude? Don't you think that if the resident engineer, by his attitude, had shown these boys that he was interested in them as well as the work and that he wanted to help them rather than find fault with their work, their attitudes would have been different? The conversation might have been more like this:

Tom: "Here comes the boss now, we won't have to call him. He'll tell us the best way to repair this thing."

Jerry: "Good, I sure hate that I let this happen, but he always says it's more important to get our mistakes corrected than it is to place the blame."

Tom: "I'll explain to him that we were short-handed today and you were trying to hold down two jobs."

Jerry: "But I was responsible for this and it shouldn't have happened."

I strive to be like the second of these men. I am sure that I have not been 100 per cent successful at it, but believe I am improving.

In the Port Arthur residency we try to start all of the young college graduates in the office. There are several reasons for this. In the first place, we find that the men become "oriented" more quickly in the office. Second, we are able to watch their progress more closely here. Third, by allowing them to work in the office until they are able to take charge of the office, we are able to give them their first training in the very important matter of taking responsibility and can observe closely the degree to which they are able to take this responsibility.

We also find that they can progress much more rapidly in the field by reason of having had this experience in the office.

It has been our practice in the past few years to place a college graduate as assistant to the man in charge of the office. Both understand that as soon as the assistant is capable of taking charge of the office, the man then in charge will be assigned to work in the field.

In this way, no doubt, we lose something in the efficiency of the operation of the office, but feel that it is necessary under the circumstances to give these boys the quickest and most thorough training possible.

We have lost so many lately that it appears doubtful if we shall be able to continue our practice of always having a college graduate in charge of the office, since the few graduates we have left are so badly needed to construct the projects coming up in the field.

Since we are all in the same boat, I am sure you realize what I mean when I say that it certainly upsets our plans when we lose one of these graduates whom we have been training to take care of the office.

In the field, a man is placed in charge of each job and is given as many trained or partially trained men as can be spared, with additional untrained men to complete the organization he needs. This man alone is responsible to the resident engineer for the proper operation and completion of the project.

We are usually able to place in charge of the laboratory a man with at least some laboratory experience. He is given an assistant whether or not he needs one for the purpose of training him, so that the man in the laboratory can be given different and usually broader responsibility on a future project. The principal inspectors are also given assistants with the same idea in mind. This procedure, of course, increases our engineering costs, but it is essential that new men be trained as rapidly as possible to supplant those leaving.

The laboratory man and the inspectors report to the man in charge of the project, never directly to the resident engineer. Although new men are employed directly by the resident engineer, the man in charge of the project has assurance that he is not obligated to keep anyone whose work is not satisfactory.

It sometimes happens that employees who have not worked well under one man work very satisfactorily under another, and exchanges are occasionally made at the request of the man in charge of a project or a field party.

Due to our shortage of trained inspectors, we have had to resort to assigning an item of work such as grading on two or more jobs to a floating inspector. In this case he is given an assistant, usually an inexperienced man, for each of the projects he is assigned to.

This was used as an expedient only, and we do not recommend it since it tends to divide responsibility to some extent and to lessen the spirit of teamwork that a man feels when he is definitely a part of a single unit, and reports to only one supervisor.

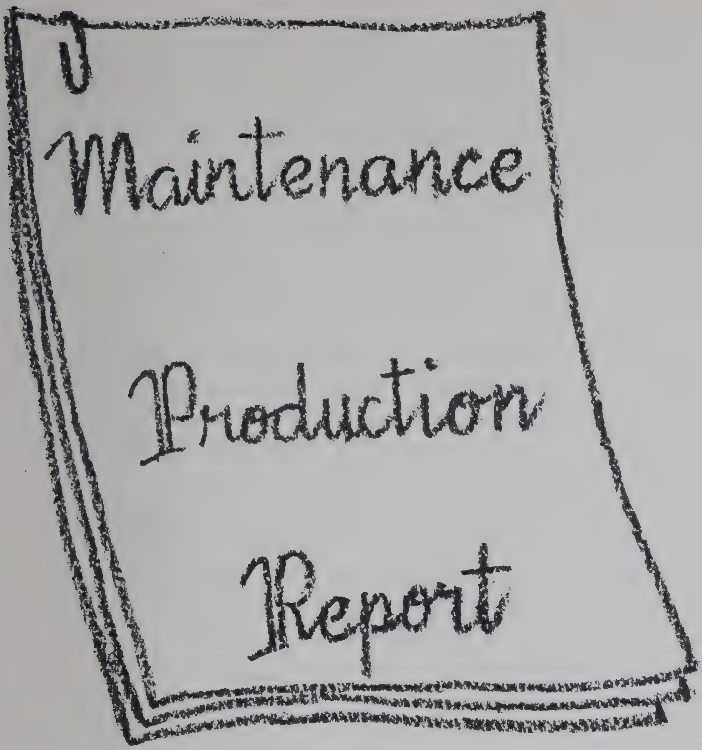
We try to assign one field party to a job if the work justifies. If the work does not justify a party full time, it is assigned preliminary work when not needed on the project.

We try very hard to avoid having more than one field party work on any one project or preliminary survey as this seems invariably to lead to confusion.

In addition to the training the men get in acting as assistants to men of more experience, when jobs are closed down due to rain or weather, the job inspector and party chiefs hold little schools in the field laboratories and field offices to instruct in things that were impossible to teach while work was in progress.

Heretofore we have not followed a well-defined plan in this instruction, but we do intend to work out a comprehensive plan of instruction in the immediate future for each type of job involved.

Continued on Page 35



Maintenance Production Report

By: *Merle L. Beach*
Gilbert W. Gray
Philip B. Keasey
Keith F. Kohler
Keith P. Lautenbach

HIGHWAY ENGINEERS,
Bureau of Public Roads.

The following concludes the series of articles taken from Report No. PS 2009 of the Production Cast Unit, Research Division, Bureau of Public Roads.

Part 6. Bituminous Center Striping Operations along U. S. 290 and Farm Road 12:

On January 23, a study was obtained of bituminous center striping operations by a four-man crew, along U. S. 290 and Farm Road 12, near Dripping Springs. This crew was part of a surfacing crew working out of District 14 headquarters and is available to the Travis County warehouse when needed. The operation consisted of making a black raised center stripe by shooting RC-2 asphalt and covering it with an extremely hard black traprock.

The equipment used for this operation consisted of a four-cubic-yard dump truck which pulled a rotary broom, and a special built single-unit asphalt stripe machine. The stripe machine is a composite unit mounted on an old one-and-one-half-ton truck chassis and includes an asphalt tank, a five cubic yard bed with a reverse dump, a retractable roller, tachometer wheel, spraybar, spreader box, and a detachable boom and sight arrangement. The machine was designed and built in the District 14 shops in 1951.

Single unit stripe machine.

The labor force was utilized as follows:

1 - Foreman driving the stripe machine

1 - Driver of truck pulling the broom

1 - Operator of asphalt and aggregate controls

1 - Laborer aiding the flow of aggregate into the chute

The crew arrived at the Travis County warehouse in the morning, where the equipment and materials were stored. They spent some time in the morning heating and loading the RC-2 asphalt and loading the cover aggregate. The black traprock used for cover aggregate was loaded by a clamshell from a stockpile in the yard.

Upon arrival at the first work site, there was a delay due to plugged oil lines and trouble in starting the gas engine operating the pump. These difficulties arose because the stripe machine had not been used recently but, once under way, the machine caused no further difficulty that day.

There were four small sections of new seal coat which required center striping. These sections varied in length from one-tenth to seven-tenths mile and were from one to nine miles apart.

The method of operation at each site was as follows. The broom truck driver would hook the drive chain on the broom, lower it, and adjust the tension against the road. While he was doing this the other men would adjust the boom and sight and the oil and aggregate controls, raise the truck bed, and lower the tachometer wheel, roller, spraybar, and spreader box. The truck pulling the broom then proceeded over the area to be striped. The striping operation was maintained at a rate of about five miles per hour with the foreman driving, the controls operator sitting on a seat between the cab and the bed, and the laborer standing in the bed, shoveling aggregate to keep it feeding uniformly into the chute. The stripe machine is constructed so that traffic can pass slowly on both sides of it. When the broom had reached the end of the section to be striped, the driver would stop, raise the broom, and flag traffic if necessary. When the stripe machine reached the end of the section, the controls operator would dismount and go back to examine the last part of the stripe. The other men, including the driver of the broom truck, would prepare the stripe machine to move to the next work site, which included raising the tachometer wheel, roller, spraybar and spreader box, lowering the truck bed, and--on long moves--removing the sight boom.

View of machine striping showing tachometer wheel, spraybar, and spreader box.

TABLE 15.

Distribution of 30.2 man-hours (1,814 man-minutes) of working time for the 4-man crew on bituminous center striping operations

Item	Total (Man-minutes)	Per cent of total working day
Operating cycle items on assigned task		
Connect and disconnect drive chain and raise and lower broom	14	1
Brooming, pulling broom with truck	14	1
Adjusting site, raise and lower boom	74	4
Raise and lower truck bed	8	-
Raise and lower wheel and roller	9	1
Raise, lower, and adjust oil and aggregate feeders	9	-
Striping, driving, and controlling materials	31	2
Keep chute filled with aggregate	19	1
Inspect stripe	9	-
	187	10
Related items including travel and preparatory work		
Travel to work site from yard	233	13
Travel from work site to yard	411	23
Travel to new work site	184	10
Maneuvers and minor moves ahead	33	2
Put on and take off flags on truck and flagging	15	1
Load and unload RC-2 asphalt	46	2
Load and unload men, tools, equipment, and other materials	31	2
Preparation of striper at work site	26	1
Heat asphalt in yard	19	1
Miscellaneous	44	2
	1,042	57
Waits and delays		
Wait for asphalt to heat	75	4
Wait on other operations	58	3
Repair oil lines and pump on striper	302	17
Instructions, inspection, and supervision	85	5
Excess lunch	13	1
Idle	34	2
Personal	10	1
Talk to public	8	-
	585	33
Total	1,814	100

TABLE 16.

Distribution of 15.4 equipment-hours (922 minutes) of working time for the asphalt stripe machine and truck pulling the broom on bituminous center striping operations

Item	Time (Minutes)		Per cent of total working day	
Operating cycle items on assigned task				
Brooming, pulling broom	14		2	
Striping	15		2	
		29		4
Related items including travel and preparatory work				
Travel to work site from yard	117		13	
Travel from work site to yard	206		22	
Travel to new work site	92		10	
Maneuvers and minor moves ahead	22		2	
Load and unload men, tools, equipment, and materials	40		4	
Prepare and adjust equipment	96		10	
Miscellaneous	6		1	
		579		62
Waits and delays				
Wait for heating and transfer of oil at yard	64		7	
Wait on other operations	14		2	
Repair oil lines and pump on striper	161		17	
Instructions, inspection, and supervision	19		2	
Excess lunch	6		1	
Idle	49		5	
Personal	1		-	
		314		34
Total		922		100

Travel for the day (both units)	Miles	Average speed (Miles per hour)
To and from work site	152.0	28
To new work site	35.1	23
Brooming	1.2	5
Striping	1.2	5
Total	189.5	

The striping was completed early in the afternoon and the crew returned to the yard, where they unloaded their materials and equipment. No attempt was made to continue the study after the men unloaded and parked the equipment used on the striping operation; the men were engaged in miscellaneous work around the yard.

During the 30.2 man-hours studied, approximately 75 gallons of RC-2 asphalt and two-cubic yards of traprock was used to lay 1.25 miles of asphalt center stripe.

Tables 15 and 16 show distribution of labor and equipment time during a one-day study of center striping operations.

Part 7. Straightening and Painting Guardrail:

On January 24, the operations of a two-man crew were observed while realigning and repainting metal guardrail on State Routes 29 and 71 near Austin. The crew consisted of the truck driver, or leadman, and one helper. Equipment consisted of a four-yard dump truck and hand tools.

The two men left the yard in the dump truck and went to a small bridge about one-tenth mile from the maintenance yard. A short section of guardrail at either end of the bridge was in need of attention. The posts were realigned by loosening the earth beside them and knocking them into position with the truck or with a sledge hammer and the railing was raised with a small hydraulic jack. The men then backfilled and tamped around the posts.

After realigning the posts and railing, the men returned to the maintenance yard where they loaded a barrel of water and some buckets and paint. They then returned to the guardrail, washed it, and painted it with one coat of aluminum paint. They also washed and painted guardrail which had not been straightened, and some twelve-inch channel bridge railing. The crew then moved to another bridge about five miles southeast of the yard. Here they realigned another short section of guardrail.

The two-man crew, in 18.3 man-hours of total available working time, aligned 162 lineal feet of thirteen-inch wide guardrail. They also washed and painted 216 lineal feet of thirteen-inch-wide guardrail, 112 lineal feet of twelve-inch-wide channel bridge railing, and 36 guardrail posts. Both front and back sides of the railing were painted. Seventeen posts out of a total of 27 were straightened in the three sections worked on.

Tables 17 and 18 show distribution of labor and equipment-time during a one-day study of straightening and painting guardrail operations.

Part 8. Brush Clearing and Burning Operations on State Route 93 near Oak Hill:

On January 24, a study was made of a three-man crew clearing right of way of dead brush by piling and burning on a section of State Route 93 approximately eight miles west of Austin.

The equipment used on this operation consisted of a four-cubic-yard dump truck and minor hand tools.

Most of the right of way along this section of highway was completely free of brush or timber; but there were several points at which timber and brush growths extended at least part way out onto the wide right of way.

Most of the work was done by hand labor, but it was occasionally necessary to use a truck to drag the larger dead trees into the open where they were cut into smaller pieces with an ax or saw.

Brush was formed into piles and set on fire while one or more men kept a close watch to prevent the fire from spreading through the dry grass and getting out of control. All large trees and tree trunks were hauled to a central pile where they could be burned later with less fire spreading hazard. The tree men took part in all phases of the operation. In the early afternoon the burning was discontinued due to increasing wind. The state water truck came out at the close of the work day and extinguished the remaining

TABLE 17.

Distribution of 18.3 man-hours (1,100 man-minutes) of working time on straightening and painting guardrail.

Item	Total (Man-minutes)	Per cent of total working day
Operating cycle items on assigned task		
Check alignment	15	1
Dig and tamp around poles	123	11
Straighten guardrailing, hand tools	34	3
Straighten guardrailing, using truck	15	1
Wash poles and rails	166	15
Paint poles and rails	503	46
Walk to and from posts	21	2
	877	79
Related items including travel and preparatory work		
Travel between work site and yard	23	2
Additional travel between work site and yard to obtain materials	5	1
Travel to new work site	21	2
Maneuvers and minor moves	16	2
Load and unload men, materials, tools, and equipment	39	3
Fill water barrel and buckets, change water	27	2
Move or prepare tools	11	1
Mix paint	6	1
	148	14
Waits and delays		
Wait on other operations	9	1
Clean brushes	18	2
Instructions and inspection	12	1
Idle	11	1
Personal	16	1
Resting	6	1
Other	3	-
	75	7
Total	1,100	100

TABLE 18.

Distribution of 9.2 hours (551 minutes) of working time for the truck on straightening and painting guardrail

Item	Time (Minutes)	Per cent of total working day
Operating cycle items on assigned task.		
Used as general purpose truck; no clearly defined cycle		
Related items including travel and preparatory work		
Travel between work site and yard	12	2
Additional travel between work site and yard to obtain materials	3	1
Travel to new work site	11	2
Minor moves, turns, and maneuvers	18	3
Load and unload men, materials, tools, and equipment	19	3
Filling water barrel and buckets, changing water	22	4
	85	15
Waits and delays		
Parked while men work	462	84
Instructions	3	1
Other	1	-
	466	85
Total	551	100

Travel for the day	Miles	Average speed (Miles per hour)
To and from yard	5.3	27
Between work sites	5.2	29
Total	10.5	

embers.

The day's accomplishment consisted of thirteen piles burned that had previously been piled, four piles piled and burned, five piles piled and not burned, with a total area of approximately 6,100 square yards or 1.3 acres cleared. The average pile was approximately four feet high and ten feet square.

Tables 19 and 20 show distribution of labor and equipment-time during a one-day study of the brush clearing and burning operations.

Part 9. Fence Building Operations on U. S. 290, east of Austin:

On January 29, a three-man crew was observed while building a barbed wire fence along the right-of-way line near the junction of U. S. 290 and Airport Boulevard.

The crew consisted of a leadman and two laborers. The equipment used was one four-cubic yard capacity dump truck and various hand tools.

The men left the maintenance yard in the dump truck with the hand tools and proceeded to the work site. Posts from an old fence line were pulled by hooking a chain between the post and the truck dump bed and then raising the truck bed. The crew then gathered the posts and hauled them to the new fence line in the truck.

The next operation was to dig post holes along a previously staked right-of-way line. After holes had been dug for a 400-foot section, the crew drove along the line of holes and threw out a post at each hole. They then set the post. Wire of the proper length was laid out on the ground, then tied to a post at one end of the section and to the truck at the other. The truck held the wire taut while a man stapled it to the posts. One man built a bracing system at the end of each section of the posts while the other two strung the wire.

After completing the first section of fence, the crew went to a second section and repeated the process. In this instance the wire was tightened with a bar as a lever rather than the truck.

The third section of fence was through an automobile junk yard. An existing mesh wire fence was in the wrong location and was therefore removed by the crew. Holes for the new fence were dug, but operations were suspended at that point for the night.

During the 27.8 man-hours observed, the crew pulled 39 old posts with the truck, pulled 10 posts by hand, dug 28 post holes 24 inches deep by 9 inches in diameter, dug 8 post holes 40 inches deep by 9 inches in diameter, set 31 posts, strung 1,200 feet of barbed wire, built four bracing systems, and removed 100 feet of mesh wire fence.

Tables 21 and 22 show distribution of labor and equipment time during a one-day study of fence building operations.

Post pulling with dump trucks.

TABLE 19.

Distribution of 28.8 man-hours (1,729 man-minutes) of working time for the three-man crew on right of way brush clearing and burning

Item	Time (Man-minutes)	Per cent of total working day
Operating cycle items on assigned task		
Walks associated with the assigned task	294	17
Gather and pick up brush	240	14
Carry brush	113	6
Pile brush	299	17
Carry and put oil on fire and light fire	26	2
Spread dirt to stop fire spreading	83	5
Tend fire	262	15
Chop, saw, and load logs	56	3
	1,373	79
Related items including travel and preparatory work		
Travel to work site from yard	83	5
Travel from work site to yard	89	5
Travel to new work site	33	2
Maneuvers and minor moves ahead	27	2
Load and unload men, tools, and equipment	37	2
Miscellaneous	5	-
	274	16
Waits and delays		
Wait for other operation to be completed	2	-
Instructions, inspection, and supervision	21	1
Excess lunch	7	1
Idle	8	1
Personal	36	2
Resting	5	-
Public traffic delay	3	-
	82	5
Total	1,729	100

TABLE 20.

Distribution of 9.6 hours (577 minutes) of working time for the truck used on right of way brush clearing and burning

Item	Time (Minutes)	Per cent of total working day
Operating cycle items on assigned task		
Used as general purpose truck; no clearly defined cycle		
Related items, including travel and preparatory work		
Travel to work site from yard	28	5
Travel from work site to yard	29	5
Travel to new work site	21	4
Maneuvers and minor moves ahead	27	5
Load and unload men, tools, and materials	23	4
Load truck with logs	8	1
	136	24
Waits and delays		
Parked while men work	440	76
Public traffic delay	1	-
	441	76
Total	577	100

Travel for the day	Miles	Average speed (Miles per hour)
To work site from yard	14.0	30
From work site to yard	15.3	30
To new work site	6.5	19
Total	35.8	

TABLE 21.

Distribution of 27.8 man-hours (1,669 man-minutes) of working time for the three-man crew on barbed wire building operations

Item	Time (Man-minutes)	Per cent of total working day
Operating cycle items on assigned task		
Drive truck and pull posts with truck hoist	45	3
Hook and hold chain to pull posts with truck	69	4
Walk between posts	14	1
Remove mesh wire from posts and pull posts by hand	17	1
Clear trash off fence line	37	2
Give line for posts or post holes	66	4
Pace off and locate position for posts	28	2
Dig post holes with post hole digger	237	14
Loosen dirt with bar	110	7
Exchange digging tool	9	1
Walk to new position	85	5
Carry posts	6	-
Set posts	128	8
Wire fence end bracings	81	5
String and attach fence wire	141	9
	1,073	66
Related items including travel and preparatory work		
Travel to work site from yard	41	2
Travel from work site to yard	41	2
Maneuvers	58	4
Load and unload posts	32	2
Load and unload men and equipment	53	3
	225	13
Waits and delays		
Wait for other man to perform an operation	208	12
Instructions	55	3
Idle	39	2
Personal	47	3
Resting	22	1
	371	21
Total	1,669	100

TABLE 22.

Distribution of 9.3 hours (557 minutes) of working time for the dump truck used on fence building operations

Item	Time (Minutes)	Per cent of total working day
Operating cycle items on assigned task		
Pull posts with truck hoist	45	8
Load and unload posts	17	3
Stretch fence wire	9	2
Haul trash	3	1
	74	14
Related items including travel and preparatory work		
Travel to work site from yard	14	2
Travel from work site to yard	14	3
Maneuvers	52	9
Load and unload men, tools, and equipment	13	2
	93	16
Waits and delays		
Parked while men work	379	68
Wait for men to perform work	11	2
	390	70
Total	557	100

Travel for the day	Miles	Average speed (Miles per hour)
To work site from yard	7.1	30
From work site to yard	7.1	30
Total	14.2	

SUBJECT: Operator's Licenses

Ralph E. Rinn, Chief District Accountant
District 13

Administrative Order No. 22-52 on operator's licenses has been complied with by many methods. This article is the second published in C & M on the method used in a particular district.

In connection with administrative Order No. 22-52, Subject "Operator's License, " we wish to advise of the method used in District 13 for compliance with this order.

For the past three years, since July 1949, we have had in use a mimeographed form called "Record of Operator's License" which was completed by each employee and by each new employee upon employment. A copy of this form follows.

RECORD OF OPERATORS' LICENSE

Name____________________

Type of License	License Number	Date of Expiration	Date of *Renewal - Application
Operator			
Commercial			

Signed____________________

Date_______________

* Indicate which

Following the receipt of Administrative Order No. 22-52 we wrote our Supervisory Employees the attached letter on the subject dated July 25, 1952. We also use a mimeographed form "List of Employees with Operator's License Information" which shows name, license number, type of vehicle (operator or commercial), and date of expiration.

A complete check on all employees was made prior to August 31, 1952, by checking on the completed mimeographed form, "Record of Operator's License, " which has the signature of the employee.

This form is submitted along with other personnel papers at the time of employment for all new employees and is filed in the individual's personnel folder. Supervisory employees have the mimeographed form, "List of Employees with Operator's License Information, " placed on the bulletin board and keep it posted for renewals and new employees.

COMMISSION

E. H. THORNTON, JR., CHAIRMAN
FRED A. WEMPLE
ROBT. J. POTTS

TEXAS HIGHWAY DEPARTMENT

STATE HIGHWAY ENGINEER
D. C. GREER

Yoakum, Texas
July 25, 1952

IN REPLY REFER TO
FILE NO.

Subject: Operator's License

To All Supervisory Employees:

Attached is a copy of a letter received from Austin headquarters concerning the above subject which needs no explanation.

Under separate cover we are furnishing an additional supply of our mimeograph form "Record of Operator's License" which has been in use for some time. To comply with the instructions, please have each of your employees complete the information and return to this office not later than September 1, 1952.

Also for your use in having a ready reference of the license information for your employees, we are attaching a form "List of Employees With Operators License Information." This form should be completed, placed on your bulletin board, and revised as licenses are renewed.

Yours very truly

M. G. Cornelius
District Engineer

RER:lw

This Is The Law!

Equipment and Procurement Division

"Whoever uses any automobile, truck, or other motor vehicle owned by this State for any purpose except in the transaction of business for the State shall be fined not less than five nor more than five hundred dollars." (Texas Penal Code - Art. 1342)

"Whoever uses an automobile or truck owned by this State for any purpose shall make a written report (form 351) of such use to the Head of the Department, Institution, Board, Commission, or other agency of this State having charge of such automobile or truck, such reports to be made daily when such vehicles are in use, a separate report being made for each day, and such reports shall be made on forms prescribed by the State Auditor. Such reports shall show the purpose for which such vehicle was used, the mileage traveled, the amounts of gasoline and oil consumed, the passengers carried, and such other information as may be necessary to provide a proper record of the use of such vehicle. Said reports shall be official records of the State and shall be subject to inspection by an official of this State who shall be authorized to audit or inspect claims, accounts, or records of any State Department, Institution, Board, Commission, or Agency of the State. (Form 281 is now used in lieu of form 351 for reporting gasoline and oil consumed.)" (Texas Penal Code - Art. 146a)

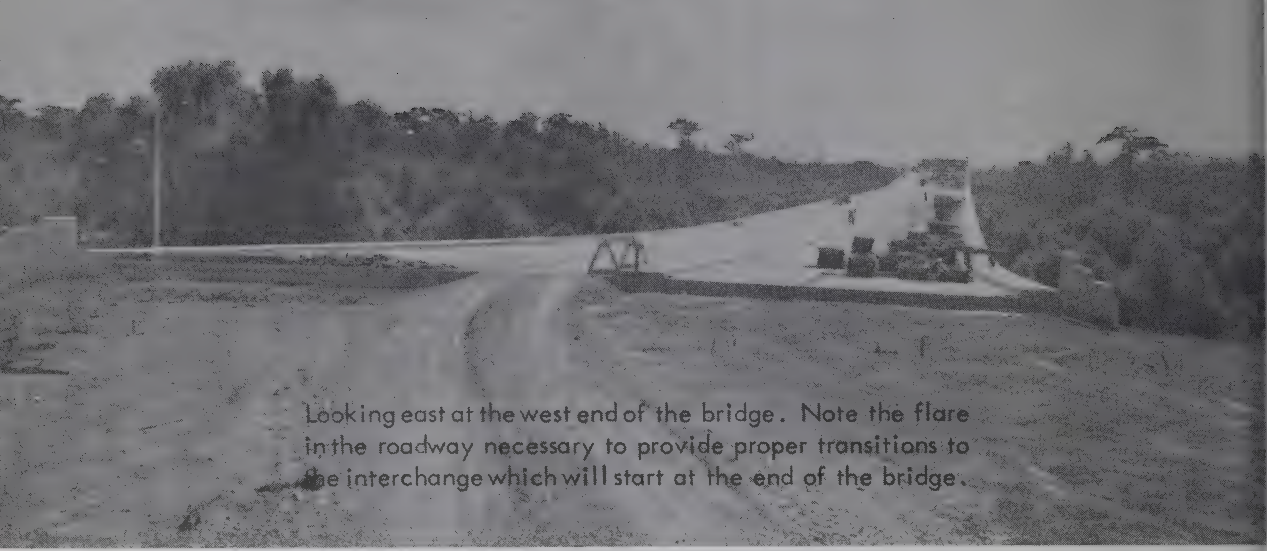
"Whoever uses any automobile or truck owned by this State for any purpose and fails to make and file a report of such use as required by this Act within ten (10) days after the use of said automobile or truck shall be fined not less than five dollars ($5.00) nor more than one hundred dollars ($100.00)."

"Whoever uses any automobile or truck owned by this State for any purpose and makes a false or fraudulent report of such use shall be fined not less than five dollars ($5.00) nor more than one hundred dollars ($100.00)."

Nuff Sed!

Neches River Bridge

Arnold Staubach, Senior Field Engineer
Bridge Division



Looking east at the west end of the bridge. Note the flare in the roadway necessary to provide proper transitions to the interchange which will start at the end of the bridge.

The substructure of the new Neches River Bridge at Beaumont was started in June, 1949, and completed on March 16, 1951. Work on the superstructure was begun in September, 1952, and was opened to the public in December, 1952.

Texas Construction Company, Dallas, is the bridge contractor, with the Bethlehem Steel Company fabricating and erecting the main girder spans over the river channel. Trotti and Thompson, Inc., Beaumont, is the contractor for the roadway approaches. E. R. Young is the Supervising Urban Engineer for the State with W. E. Simmons as District Engineer. R. E. Killmer, now Engineer-Manager of Dallas Urban Expressways, was District Engineer during the earlier stages of development of the project. The completed cost will be approximately $3, 240, 000.

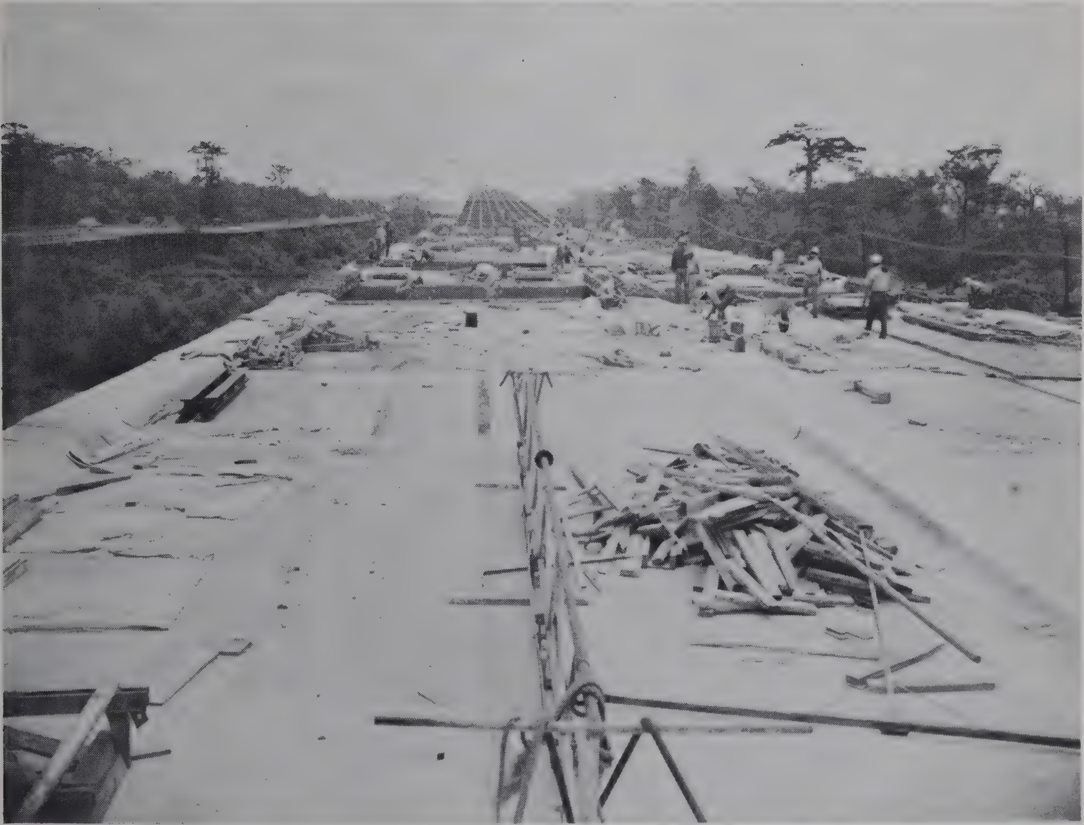
Work on connections to existing streets and highways is underway and will be complete in time for the entire facility to be opened to traffic in the early spring of 1953.

The bridge is 3, 826 feet long, with two 26-foot roadways separated by a four-foot raised median, and two two-foot, six-inch pedestrian walkways. It is a fixed deck structure with concrete floor. All steel supporting members are below the level of the roadway. The spans are composed of I-beams or plate girders in units of two, three, or four spans continuous over the intermediate supports, bents, or piers. The underclearance over the river channel is fifty feet. This permits unrestricted passage for barges and towboats without the interference to highway traffic that is now occasioned by the opening of the draw span in the bridge that is to be replaced. The latter bridge is 2, 855 feet long, with a twenty-foot roadway and one pedestrian walkway. The approach spans on the west, or Beaumont side, are timber units in greatly deteriorated condition. The main channel is spanned by two 125-foot steel through trusses and one 240-foot steel through swing truss, with twenty-five foot clearance above the water in the closed position.

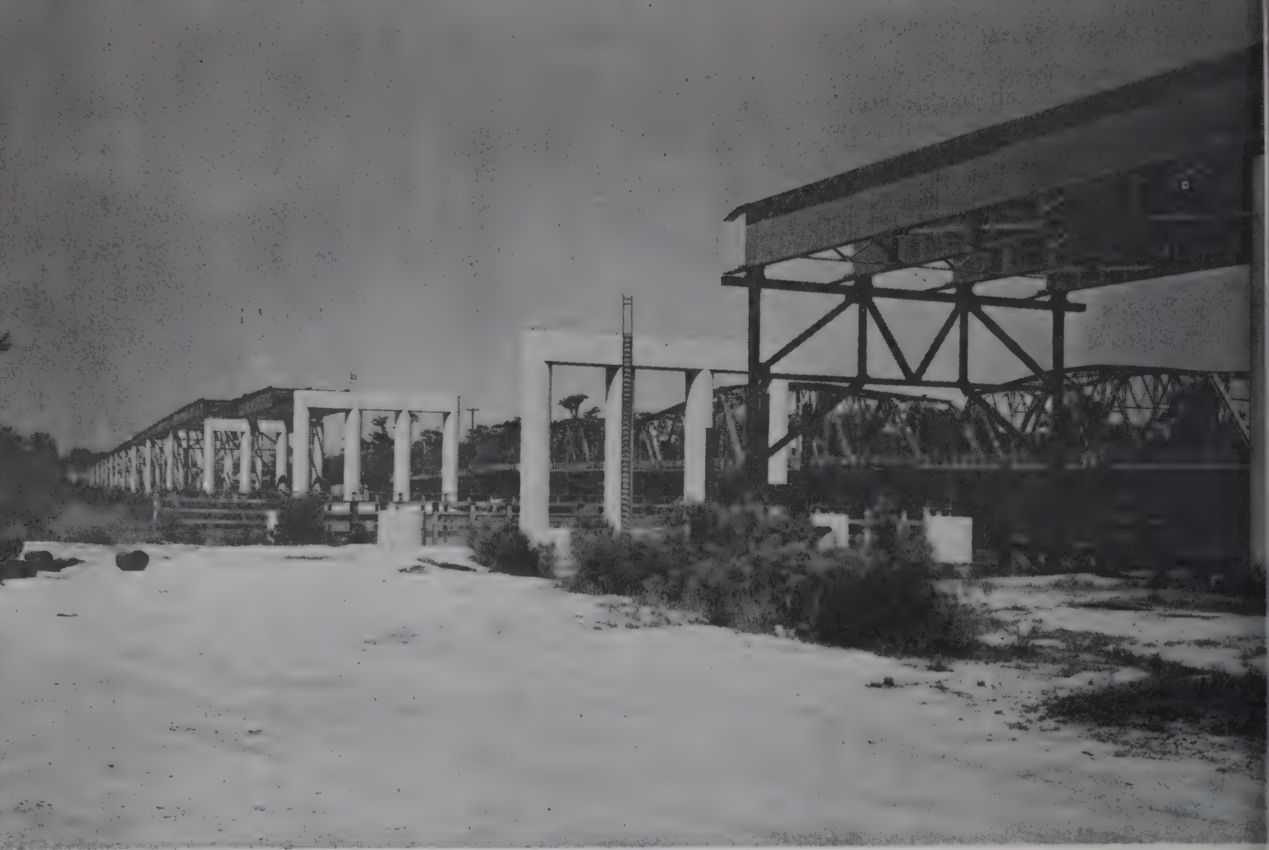
The most striking feature of the new bridge is the plate girder construction in the central portion of the structure. This consists of three 4-span continuous units totaling 1,720 feet in length. The center unit contains spans of 180 feet, 240 feet, 240 feet, 180 feet, which compare favorably with similar spans in bridges recently built in other parts of the country. The girders over the center pier are ten feet deep, but the gradation in span length toward the ends of the 1,720 foot section made it possible to reduce the girder depths in graceful curves to three foot depth at the ends of the section to correspond to the 36-inch beam spans in the approaches. This variation in depth added to the expense and difficulty of construction, but the resulting appearance, with no incongruous breaks in the sweeping contours of the structure, is well worth the trouble

The great length of the plate girder units required unusual care in regard to movements and stresses due to temperature. For a change in temperature of 60 degrees, the 1,720-foot length of structure will stretch or shorten eight inches. If the steel were constrained from these changes in length, stresses in the steel for this change in temperature would be developed equal to two-thirds the allowable working stress for line and deadload. In order to reduce these movements and stresses to manageable proportions, expansion spaces were provided at the ends of the units, fixing one or two bearings near the center of each unit and permitting the remaining bearings to move on rockers. In order to permit smooth riding over the wide expansion spaces necessary at the ends of the units, so-called "finger joints" were installed in the roadway.

The substructure was designed with simple flat and circular surfaces so that steel forms could be used throughout. This increases the speed of the

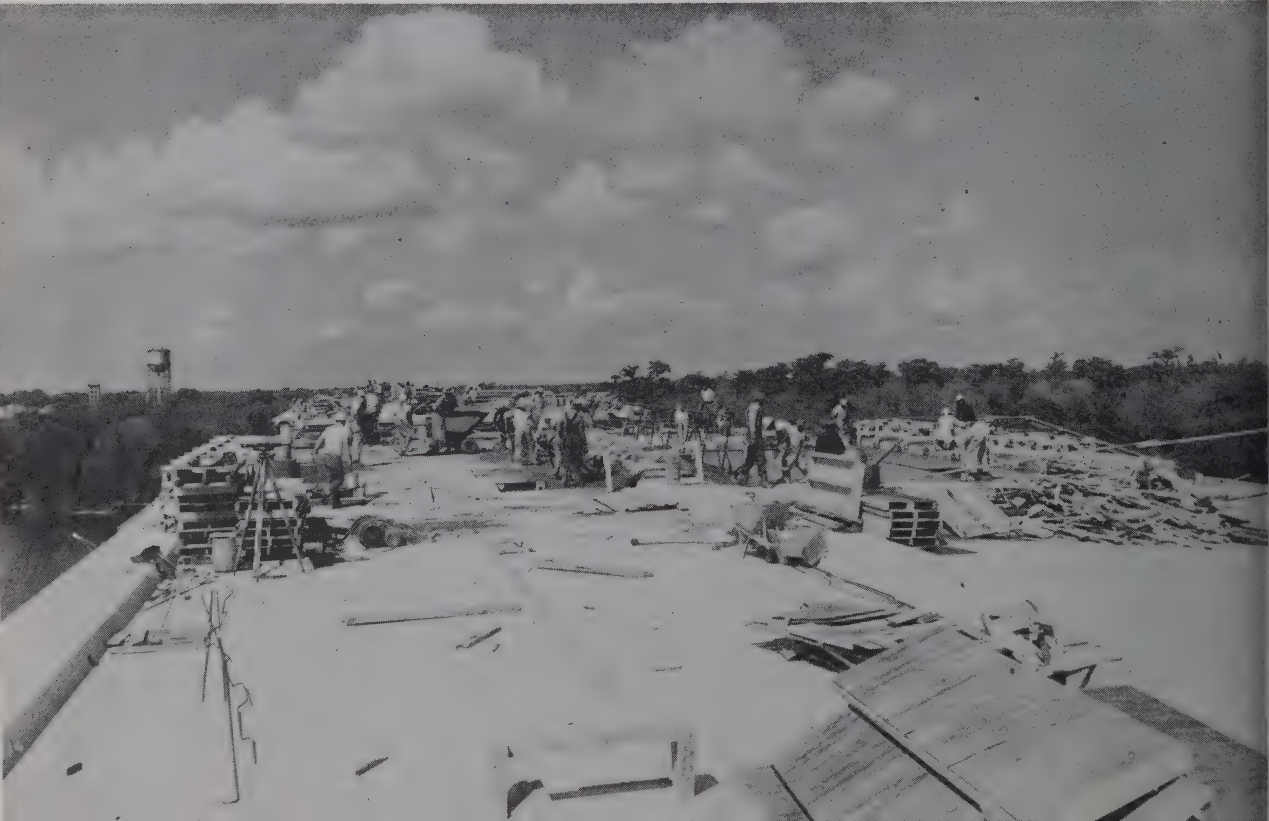


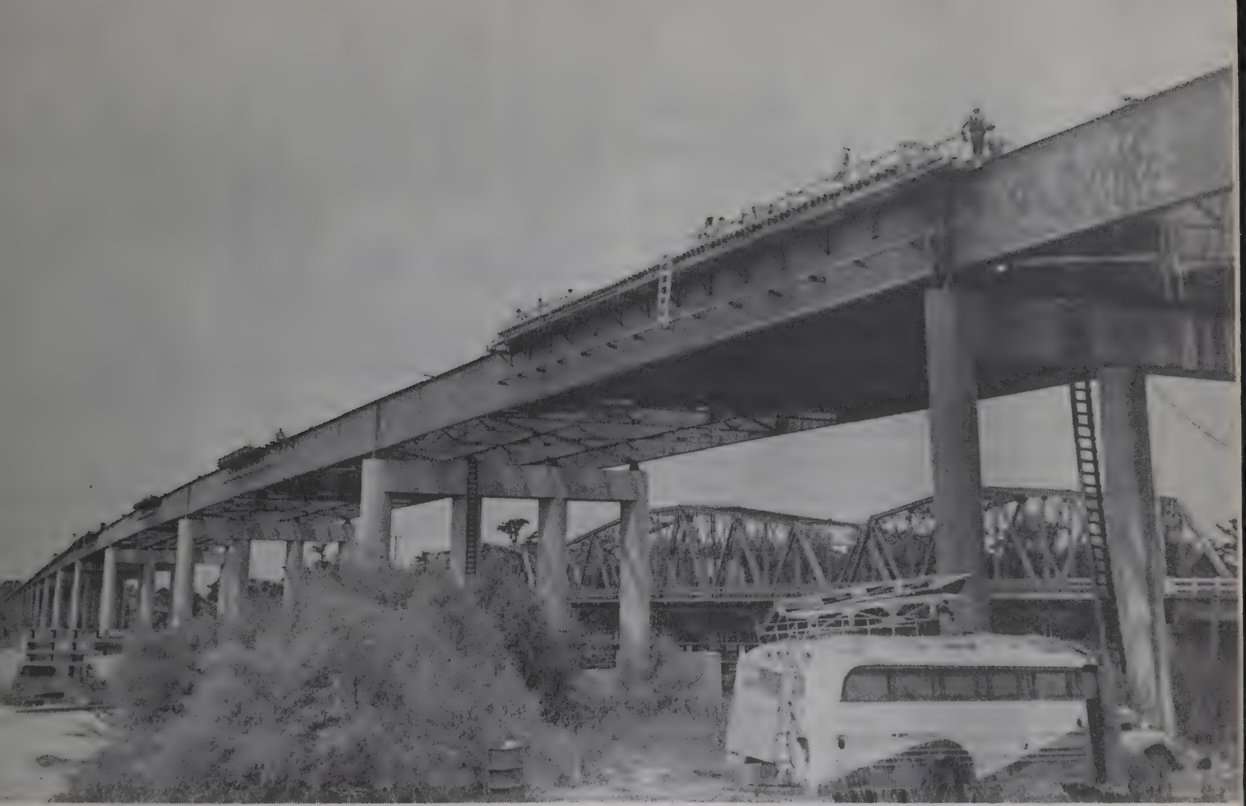
View of deck looking east. A finger joint can be seen in the foreground, and the timber trestle in the old bridge is seen at the left.



This view shows the "false bents" used in erecting certain portions of the main girder units. The picture was made at the east bank of the main channel looking northwest.

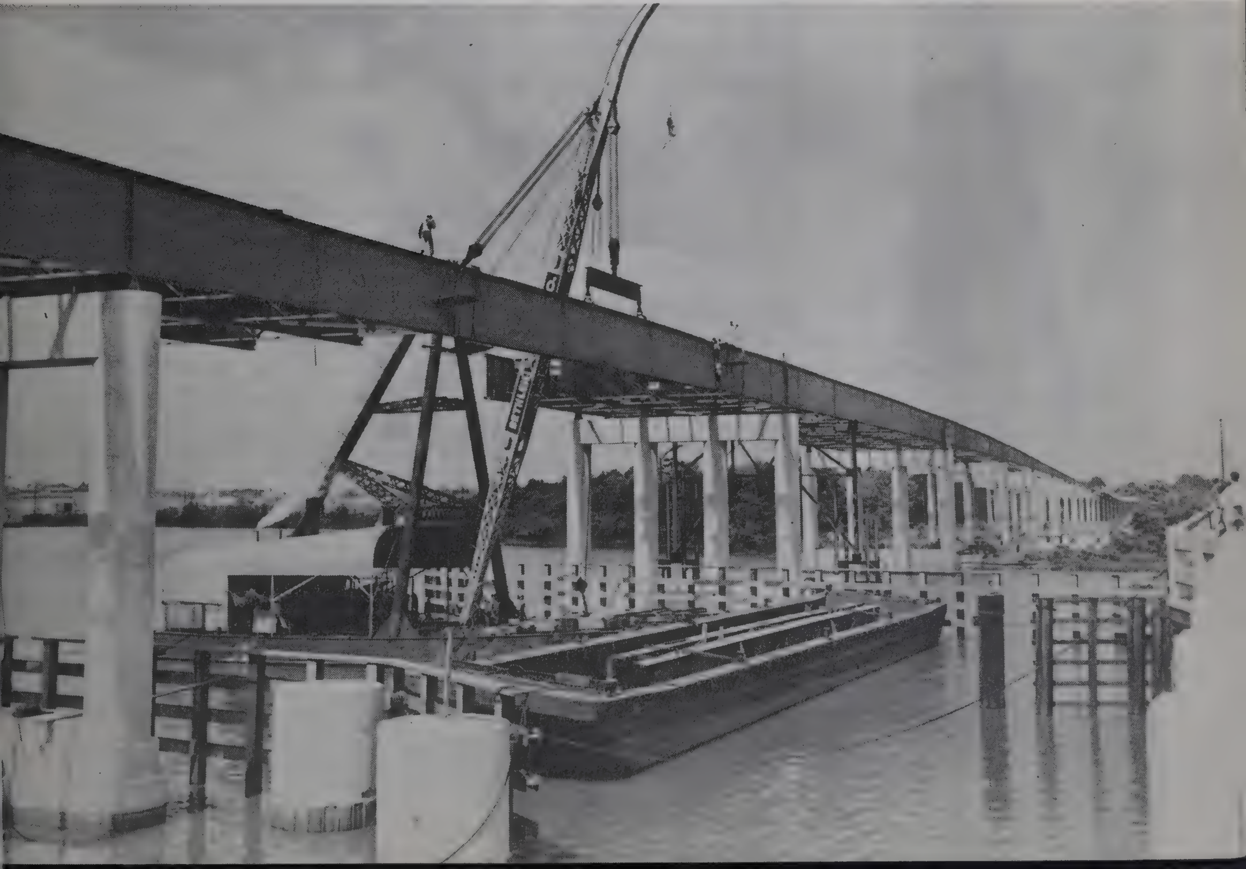
Looking west toward Beaumont. This view shows concreting operations on the deck.





View looking west toward Beaumont shows the main river piers and spans, with the existing birdge in the background.

This view of steel erection in the main spans was taken looking west from the old bridge. The Bethlehem Steel Company Shipyard in Beaumont is in the background.

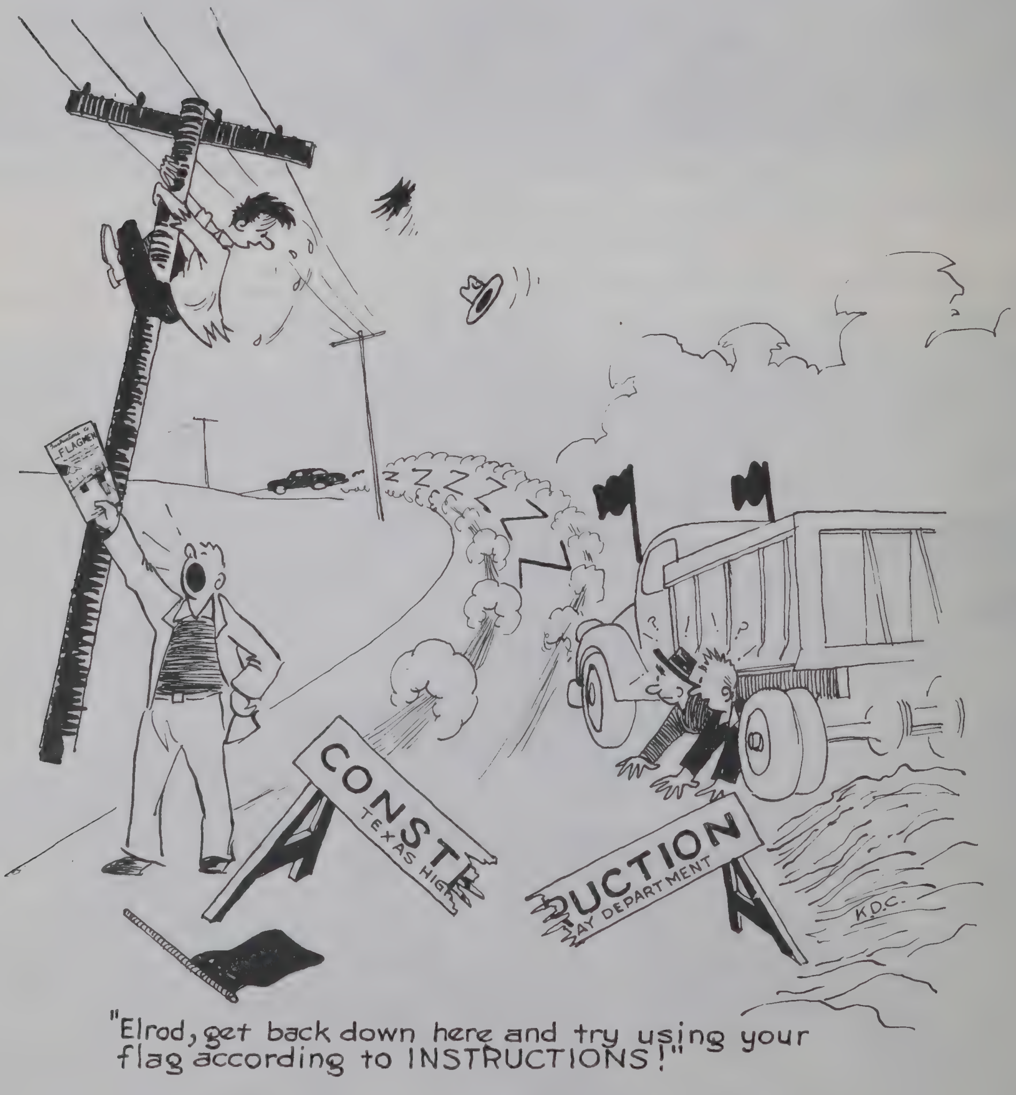


work, reduces the cost, and improves the appearance of the finished work.

Removal of the existing truss spans will be effected by floating them on barges for removal to points at which they can be dismantled. The 25-foot depth of water in the main stream and navigation requirements will preclude the use of temporary falsework. The new bridge was arranged so that the old pivot pier will remain as part of the new fenders. It will be necessary to remove the other piers to the stream bed in accordance with U. S. Engineer Department regulations.

The new crossing will fill an important gap in the interstate highway being developed between New Orleans and Houston, and will be a worthy approach to Beaumont and the urban expressway being developed to extend westward across the city from the bridge, skirting the main business center about one mile to the north. In order to provide proper access to the streets leading to the center, an elaborate interchange is being planned at the west end of the bridge. When this is completed it will contain three grade separation structures to permit free and uninterrupted passage for traffic in all directions.

* * *



"Elrod, get back down here and try using your flag according to INSTRUCTIONS!"

Asphaltic Blademix Surfacing Operations

R. N. Jennings, District Maintenance Engineer
and
W.P. Fulgim Jr., Senior Inspector
District 7

It is the intent of this article to supplement pictorially the blademix leveling operations discussed in a paper published in Construction and Maintenance Bulletin No. 11, and to add any information learned or confirmed during the past asphalt season.

One observation is that the end of mixing operations leaves a windrow of uniform quantity and that to use all this material would result in very little improvement of the riding surface where there are fairly large areas of high and low spots since the ability of the blade to move the mix longitudinally from a high to low spot is limited. Utilizing all of the material would result in most of the high spots remaining after completing the blading. It is felt that smoother riding surfaces are obtained by wasting that portion of the material which remains opposite the high spots after completing the final pass or "dribble."

Satisfactory results were obtained on several projects using aggregate differing in grading from the screen sizes given in the previously mentioned article. It should be noted, however, that the larger the aggregate used, the greater quantity required per station to obtain satisfactory results.

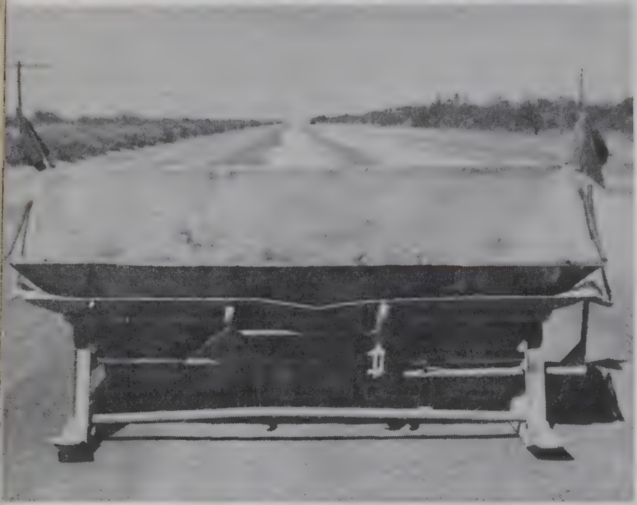
Experience this past summer leads us to believe that the fifteen gallons of asphalt per cubic yard of aggregate mentioned in our paper on leveling operations is on the upper limits of the quantity of asphaltic material required. Good mixtures were obtained using as little as twelve gallons per cubic yard of aggregate. It was noted that gravels, or crushed stone, that were low in minus 20 mesh material or that were washed material required a minimum of asphalt to obtain good results.

The project illustrated used a large amount of equipment, and this is necessary for large - scale production. However, good results on a smaller scale have been obtained by using equipment available to any Maintenance Foreman - - an asphalt pot, smaller maintainer, truck tires for pneumatic rolling, and a small pull flat wheel roller.

The method of control of the mixes is visual, and as long as it remains so, the person directly supervising operations must be experienced, control each "shot," and be intensely interested in obtaining a good job.

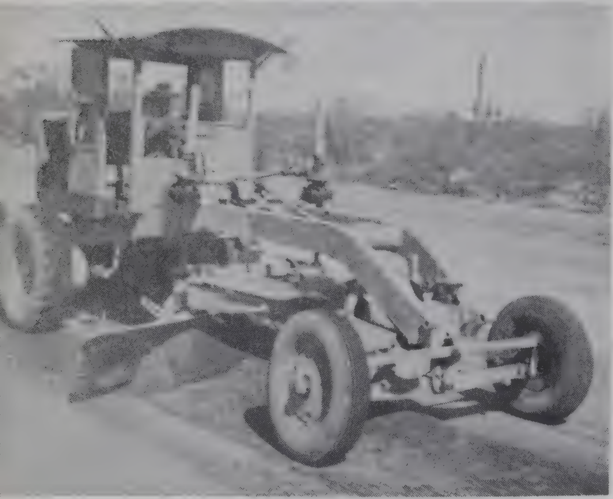
The use of blademixes will accomplish no miracles in the maintenance and upkeep of our highways. Better and more durable results may be obtained with the higher types of asphaltic concrete. However, it is felt that the cost of the blademix surfacing, which is approximately $2,250 per mile on the average project, is well worth the extra $1,000 that it costs over the typical seal coat, since the well-performed blademix operations improve the riding qualities of the pavement, while also providing a non-skid watertight wearing surface.

Spreader box for windrowing aggregate.



Windrow of aggregate left by spreader box.

Leveling windrow for application of asphalt.

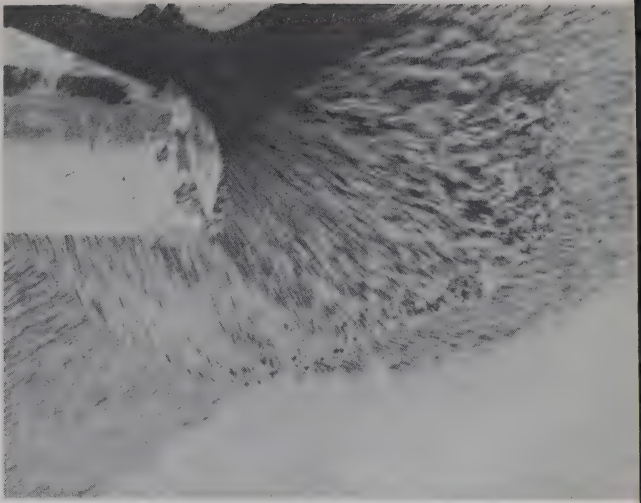


First application of cutback asphalt.

Initial mixing of asphalt and aggregate.

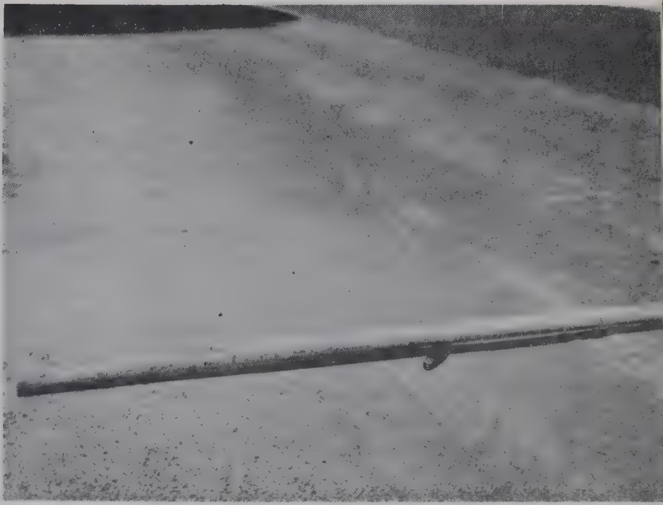
Second application of asphalt followed closely by mixing operation.

Continuing mixing operations.



Note whirling motion of mix at end of blade.

Rotary broom keeps fines in mix.

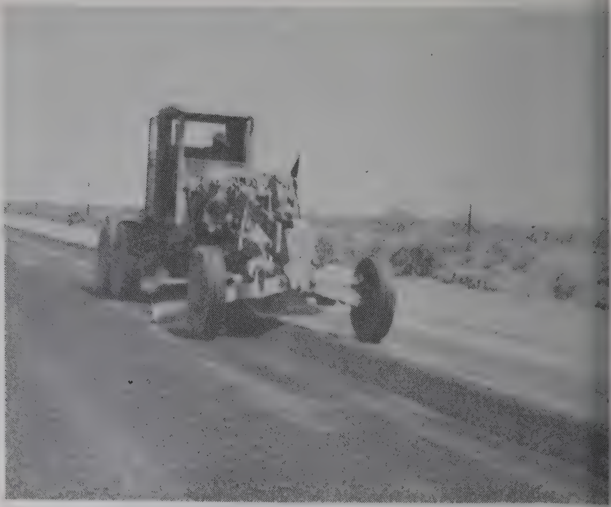


Extent of depression in pavement being leveled.

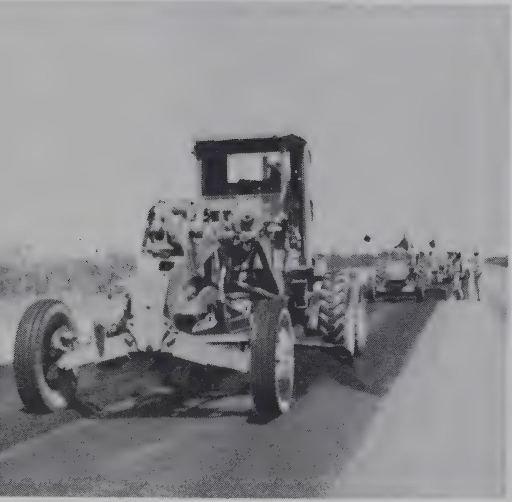
Point of wet and dry joint.

Application of additional asphalt to secure uniform color mixture.

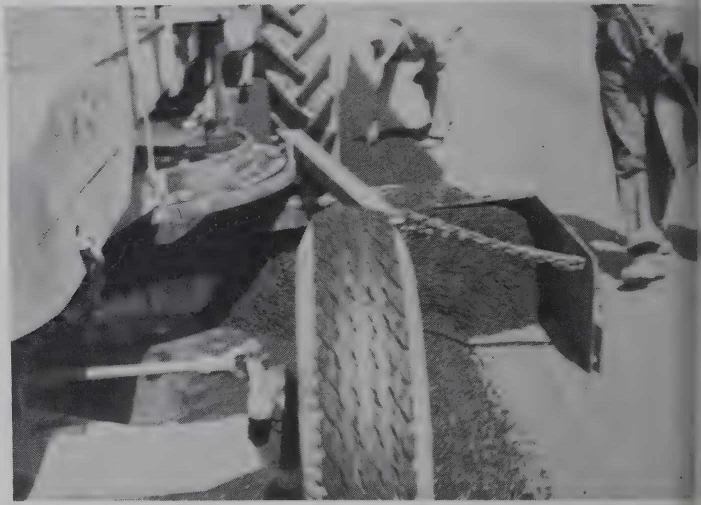
Tack coat applied in half widths.



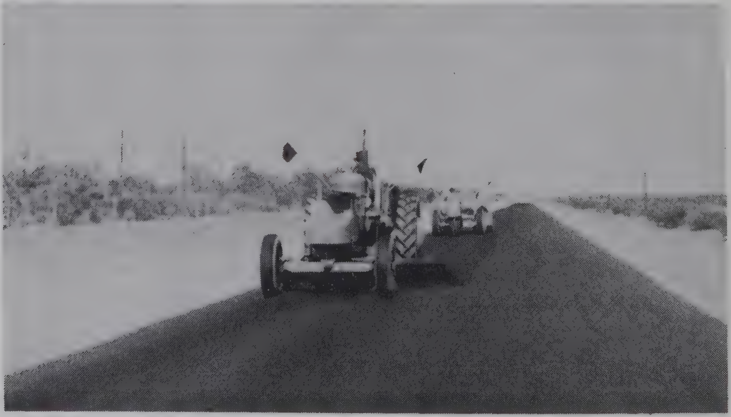
Dividing windrow for carrying to edge.



Leaving small windrow for forming edge.



Shoe used for establishing line and grade on edge.



Mix being bladed and pneumatic rolled in thin lifts.

These planned schedules will cover instruction calculated to give these future inspectors and instrument men the fundamentals that they need in the shortest possible time. We believe this is the most practical way to instruct them on the job.

We consider our job planning very important too, and plan to improve it. Just prior to beginning a new job we will assemble all those who will work on the job and discuss its operation from every angle. In this way the inspectors are alerted to what might be expected and also probabilities that might arise in the construction of the project, and they are better prepared to cope with it.

But most important, each one gets a clearer picture of, not only his responsibilities, but also those other members of the team, and team work is thus facilitated a great deal.

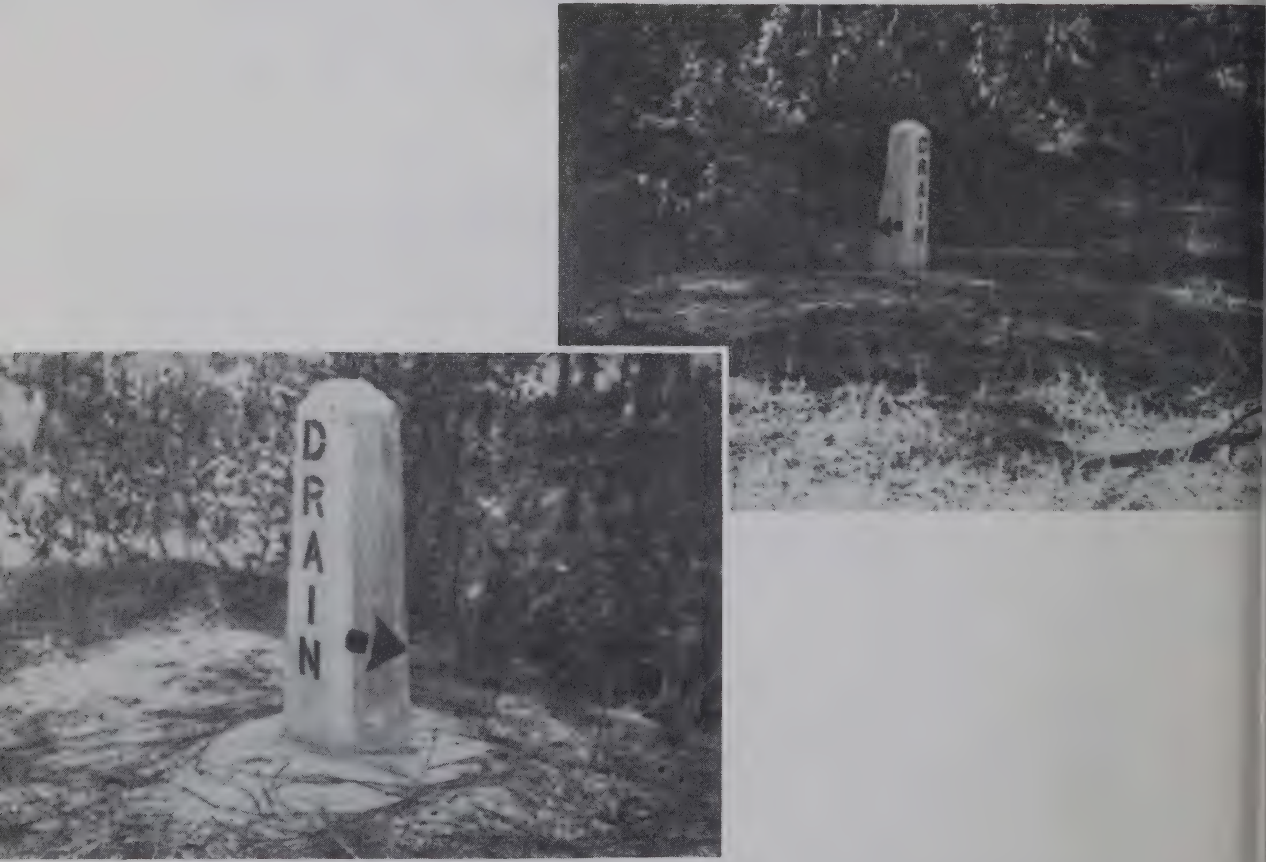
* * *

TWENTY-FIVE, THIRTY, AND THIRTY-FIVE YEAR AWARDS
November, 1952

First Row: R. W. Stowe, C. M. Tucker, Alton Vordenbaum, A. J. Weber, Claud H. Word.
Second Row: James F. Nance, Lon Parr, Joe Prosise, Price Rainey, J. W. Reed, Claude Riney, Everett Roe, Jack Sides, Dal Stapleton.
Third Row: J. M. Harris, Lawrence Hodde, R. F. Hoffman, J. K. Jones, Robert Klar, F. L. Mangum, A. B. Middleton, N. O. Miller, Willis R. Monroe.
Fourth Row: George Brooke, H. M. Burke, A. H. Burnett, M. D. Conover, John Dickman, Glynn Drake, Antioco Espinoza, J. G. Forrest, Sidney T. Grayson.
Back Row: J. B. Nabers, O. D. Dickey, H. F. Payne, W. J. Van London, Cary Wicker, K. R. Allen, Z. H. Anderson, C. L. Boes, Alfred B. Braswell.

ABOUT THE DISTRICTS

ANOTHER USE FOR THE RIGHT-OF-WAY MARKER IN DISTRICT 20

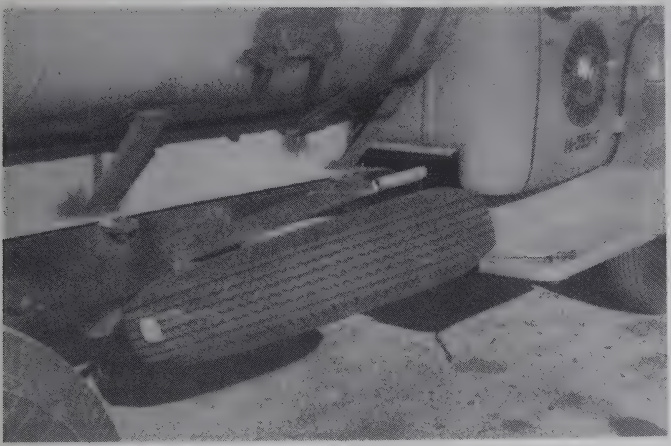


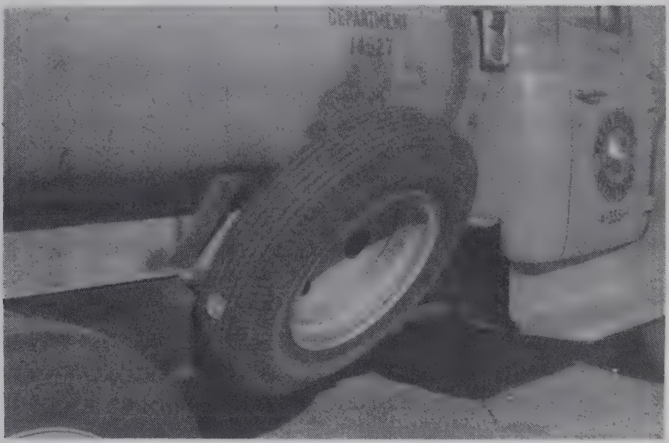
In some parts of the districts, where water-bearing sands are encountered in grading work, it has been necessary to construct drains for subsurface drainage. Usually, the outlet ends of these drains are not readily apparent.

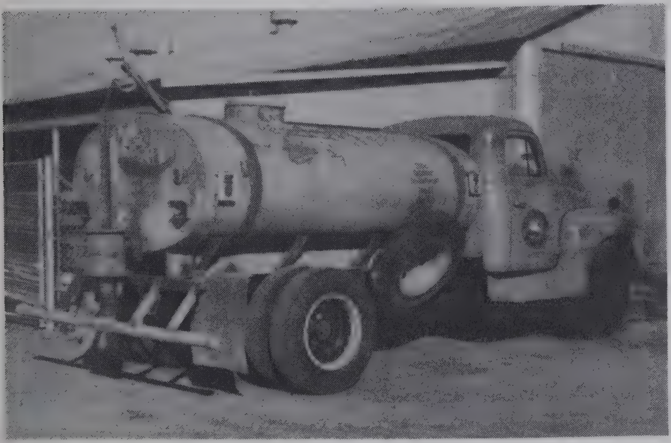
Senior Maintenance Superintendent Milton Hayes conceived the idea of marking the locations of drain outlets with standard right-of-way markers with the word "Drain" and an arrow stenciled on them.

The markers not only make the drains more easily found, according to District 20 men, but also serve to encourage maintenance employees to provide necessary maintenance.

DISTRICT 14'S METHOD OF MOUNTING SPARE TIRE ON TANK TRUCK







The mounting is hinged so that one man can handle the tire and wheel.

Safety Program

District 2

W.W. Finley, District Engineer
District 2

As District 2 had ranked no better than thirteenth in the over-all accident record of the department since 1941, with a rating of 22 over the subsequent ten year period, we decided to make a concerted effort during 1950 to improve this unenviable record.

First, all supervisors were reminded of their important part in our safety program by virtue of their responsibility and position during a special safety conference. Proper preparation of material for the safety meetings and employee participation also were stressed.

Second, we combined the maintenance section and construction residency into one group for the regular monthly safety meeting. This not only pools the talent, but gives the construction and maintenance employees a good opportunity to become better acquainted, thus making a closer-knit, friendlier departmental organization in each county. Responsibility for the meeting alternates from month to month so that both construction and maintenance problems are discussed. Generally most accidents are common to both groups.

In addition a District Safety Committee composed of the Assistant District Engineer, District Maintenance Engineer, and a resident engineer or maintenance foreman, was set up to investigate and report on accidents, particularly lost time. The selection of the third member of this committee is dependent upon the type accident, maintenance or construction. The findings of this committee are made available to all supervisors for discussion in subsequent safety meetings. In addition, this committee posts a monthly record of accidents by supervisors so that all employees may know their standing in the District.

This accelerated program had the desired effect as District 2 climbed from fifteenth place in 1949 to fifth place in 1950, and to second place in 1951.

Then apparently we became lax and over-confident and quickly dropped to eighth place in the state for 1952. To again stimulate interest in our safety program and create competition among our various sections and residencies, we borrowed an idea from the "Boll Weevil." This is a monthly publication of B. F. Walker, Inc., a large trucking concern with headquarters in Fort Worth and a number of suboffices over the state. This company awards a "doghouse" monthly to the suboffice which "earns" it by having the poorest safety record. We believe this "doghouse" award is an excellent idea so we would like to share it with you. The picture is of our "doghouse," which we award at the monthly safety meeting to the organization which had the poorest safety record during the previous month.

Needless to say, the supervisors do not want this red and white object on their desks and certainly they do not publicize receipt of this dubious award, but word leaks out each month about safety meeting time.

We believe this "doghouse" will stimulate enough interest in our current safety program to create a spirit of competition among our organization and, if this occurs, our safety record will improve.

* * *

A "SIGN" OF SAFETY
DISTRICT 20

SAFETY — FIRST
A GOOD WORKER IS A SAFE WORKER

This "Safety First" sign, which Construction Superintendent Oscar Hoffpauir designed, is located at the entrance to his Special Job Warehouse at Loeb.

The letters are interchangeable and a new slogan is placed on the board each month after each safety meeting.

Ideas are obtained from suggestions dropped into a conveniently located box by employees.

"Comments From the Traveling Public"
OVER THE HIGHWAYS

HIGHWAY SIGNS, SIGNALS, AND MARKINGS

This is what a few of the out-of-state tourists visiting Texas in December thought of our Highway Signs, Signals, and Markings.

. . . Hard to follow our road through the city - streets wind around and are not carefully marked. . .

Denver, Colorado

. . . We like to see name and population as we enter each incorporated town. . .

Thomas E. Maxwell
Ottawa, Illinois

. . . Poor highway marking - discourteous drivers - Texas Highway Department misinformed about road conditions. . .

Vienna, Illinois

. . . We suggest more warning signs for bad curves, narrow bridges, hazardous road conditions. . .

W. G. Hanson
El Segundo, California

. . . Think larger signs denoting turn in highway in municipalities and signs posted at longer distances from turns, junctions, etc., would save turning back and asking about routes. . .

San Diego, California

. . . Highway markers have no directional notations such as 82W and 82E. Caused us 90 miles discomfort! . . .

Miami Beach, Florida

. . . City traffic lights not in standard positions. Speed of Texans too high and they are in too much of a hurry, honking at us as we try to keep on our route. . .

Boston, Massachusetts

. . . No mileage on state signs - example, arrow on sign pointing the direction, but no mileage. . .

Chicago, Illinois

. . . The highways through the larger cities are not marked clearly enough for strangers. . .

Vancover, British Columbia

. . . Lack of road signs. . .

Claremore, Oklahoma

. . . Failure to tell how far to the towns and cities on road markers. . .

Everette Murray
Dorris, California

. . . No signs to designate curves after long stretches. "Those damn wastelands and mountains." . . .

Kentucky

. . . Too low speed limits in smaller towns. Inadequate traffic signals in small towns, should be standardized especially for location. . .

Encino, California

. . . We think Texas is a wonderful state and enjoyed its hospitality, especially that of the state troopers as we entered. We enjoyed the long straight roads until we tried to follow No. __ through ____ . . .

Carl N. Turner
Seattle, Washington

. . . The roads are not numbered good enough through cities. Having two roads with like numbers is misleading. We went wrong two times because of this. . .

William Sickman
Echo, Minnesota

. . . Not enough mileage signs. Passing zones not all marked. Highway through cities - travel takes too much time. Poor highway markings in towns. . .

Milwaukee, Wisconsin

. . . Lack of directional marking to places of interest. Highway markings in larger cities are not always easy to spot especially if you slip off on a side street to parking area and try to return to route. . .

Winter, Wisconsin

DISTRICT 22 HAS A FIELD DAY . . .

. . . Permit me to take this occasion to thank the Highway Department of Texas for the operation and maintenance of the Judge Roy Bean Office in Langtry; I have traveled Texas many times enroute to Mexico, but have never been so impressed by any historical land mark in your great state.

You have reason to be proud, also, of the man in charge of this building, as well as your excellent highway system.

Sgt. John J. Sheridan
Chicago, Illinois

. . . I would like to give a word of appreciation to the courtesy received on a recent trip through Texas. The roads were wonderful and we thoroughly enjoyed our trip.

Mrs. R. J. Borne
Spokane 14, Washington

Road Condition Reporters

District No.			Alternate	District No.			Alternate
1	Paris	W. M. Heath	T. M. Hagood Jr.	13	Yoakum	Zay Johnson	H. C. Veazey
2	Fort Worth	A. W. Boyd	W. W. Potter	14	Austin	R. R. Schroeter	J. D. Staples
3	Wichita Falls	L. E. Morris	O. W. Garrett	15	San Antonio		C. T. Holmes
4	Amarillo	J. M. Harris	Charles W. Smith	16	Corpus Christi	T. O. Foster Jr.	R. E. Johnston
5	Lubbock	R. W. Tucker	J. D. Willson	17	Bryan	D. L. Hogan	Q. Dyess
6	Pecos	W. A. Davis	W. E. Kelley	18	Dallas	W. B. Purcell	Leon Harris
7	San Angelo	T. A. Henderson		19	Atlanta	Roy Johnston	
8	Abilene	E. W. Couch	R. L. Daugherty	20	Beaumont	Milton Hayes	Harry Gray
9	Waco	J. A. Snell	H. E. Chiles	21	Pharr	Tracy Haliburton	Clyde Salter
10	Tyler		F. G. Rankin	22	Del Rio	C. N. Parsons	W. L. Ford
11	Lufkin	J. M. York	C. T. Currie	23	Brownwood	W. T. Moore	
12	Houston	L. T. Mings	R. A. Scott	24	El Paso	Max W. Moore	

District No.			Alternate
25	Childress	Palmer Massey	D. R. Doshier

LLOB2